DILIP K. DAS-GUPTA (1928-2002)

Dr. Dilip K. Das-Gupta, an eminent applied physicist in the field of dielectric materials, passed away on Saturday, 5 January 2002 after a brief illness. Dilip Das-Gupta was born on 16 September 1928. In 1949, he graduated from the University of Calcutta, India with a First-Class Honours B.Sc. degree in Physics. Subsequently, he obtained an M.Sc. degree in Radio Physics from the same university and then emigrated to England where he worked as Electronic Engineer, Research Engineer, and Deputy Chief Instrumentation Engineer for industrial companies in Cambridge and London, U.K. until 1960.

From 1955 to 1960, in parallel with his job in industry, Dilip Das-Gupta pursued research at the Birkbeck College of the University of London. This work earned him a Ph.D. degree in Nuclear Physics from the Science Faculty of Birkbeck College in 1962. From 1960 until 1965, he was a full-time Research Fellow in the Physics Department of Birkbeck College and worked on an absolute determination of internal-conversion electron energies of Thorium B.

In 1965, Dr. Das-Gupta was appointed Lecturer at the School of Electronic Engineering Science of the University College of North Wales in Bangor, Gwynedd, U.K. where he immediately started research on the dynamics and heat transfer in fluidised beds. During the seventies, Dilip Das-Gupta developed his own line of research on the physics of dielectric polymers. Within a few years, he became a leading expert on charge trapping and conduction in insulating polymers and on piezo- and pyroelectric polymers – a new field that had begun only a few years before. In a seminal 1977 paper in *Applied Physics Letters*, he reported changes in the x-ray diffraction patterns of polyvinylidene fluoride caused by corona charging. This led the way to the discovery of a new electric-field-induced crystalline phase of this semicrystalline ferroelectric polymer. These findings, as well as his systematic use of corona poling and structure analysis, resulted in seminal publications on the link between the morphology and the ferro-, pyro- and piezoelectricity of polyvinylidene fluoride and its copolymers.

The year 1979 saw the beginning of a series of highly successful research visits to several foreign laboratories. Dr. Das-Gupta became a consultant to the Department of Electrical Engineering at the University of Southern California in Los Angeles, U.S.A. where he worked on

conduction mechanisms in insulating polymers. During the following decades, he closely collaborated with colleagues in Australia, Brazil, Canada, China, Germany, Greece, Hong Kong, Israel, Italy, Portugal, Russia, Spain, and the United States and spent many working visits in these countries. These visits resulted in a large number of joint publications, principally in the areas of space charge and aging in insulating polymers and power cables and applications of piezo- and pyroelectric polymers and composites in smart sensors. In his collaboration with colleagues from industry, independent laboratories and universities as well as in his funded support by various agencies, Dilip Das-Gupta - a true applied physicist - always maintained a good balance between fundamental and engineering aspects of research and technology.

In 1982, Dr. Das-Gupta was promoted to Reader by his faculty in Bangor. During the eighties, together with Sidney Lang, he introduced the Laser Intensity Modulation Method (LIMM), a non-destructive pyroelectric technique for probing space-charge and dipole-polarization distributions in dielectric films. This low-cost high-resolution technique is now employed in several laboratories around the world. Dr. Das-Gupta continued to contribute to its experimental and theoretical refinement, in particular through careful direct comparisons with related experimental methods. Because of his leading position in the field of electrets, he was able to organize and chair the 6th International Symposium on Electrets in Oxford in 1988. This was accomplished at very short notice, but with great success.

His outstanding scientific achievements were acknowledged in several awards and honors including the Doctor of Science degree from the University of London. He was elected Fellow of the Institution of Electrical Engineers (IEE) and of the Institute of Physics (IoP) in 1989. He received the prestigious Thomas W. Dakin award from the IEEE Dielectrics and Electrical Insulation Society and was elected Fellow of the Institute of Electrical and Electronics Engineers (IEEE) in 1994. He gave the Whitehead Memorial Lecture at the IEEE Conference on Electrical Insulation and Dielectric Phenomena in 1996.

He formally retired in 1993, but was subsequently appointed Honorary Research Fellow by his university. Dr. Das-Gupta continued and even increased his very fruitful research, in particular his dedicated work with young talented scientists from all over the world. During the 1990s, he

became one of the leading experts on polymer/ceramic composites and contributed often-quoted review articles to journals and books. His "Advanced Materials Characterisation Group" at the School of Informatics of the University of Wales in Bangor (the current name of his university) studies materials for high-energy storage, smart ferroelectric/polymer composite sensors, electrical and dielectric properties of chemically treated polymers, dielectric spectroscopy of polymers and ceramic/polymer composites, and AC-field aging of power cables in humid environments. Dilip's unexpected death left much of this promising research only partly completed.

Dilip Das-Gupta always supported and furthered students and young colleagues from developing as well as from developed countries. For many years, he was involved in a European SOCRATES/ERASMUS network and hosted students from all over Europe in his laboratory. Because he motivated all his students so well and helped them with their individual scientific development, he was able to publish a number of papers together with them over the years. His deep understanding of philosophy and culture and his sensitivity for the feelings and the thoughts of others as much as his scientific excellence made him a very successful teacher and promoter of students and scientists from all over the world. Many of the students later had the privilege to become his friends and colleagues. They will continue to promote science in research and teaching following his example and in his style and they will always remember his generous and open personality with fondness.

Dilip had the rare gift of combining scientific excellence and exactness with personal warmth, deep understanding and a wonderful sense of humor. We all miss him and offer our sympathy to his wife Barbro and their children Emma and Luke.

Reimund Gerhard-Multhaupt (University of Potsdam, Germany) and Sidney B. Lang (Ben-Gurion University of the Negev, Beer Sheva, Israel)